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EUROPEAN PATENT APPLICATION

21 Application number: 89850050.9

51 Int. Cl.⁴: **B 65 D 75/52**

22 Date of filing: 14.02.89

30 Priority: 15.02.88 SE 8800494

43 Date of publication of application:
23.08.89 Bulletin 89/34

84 Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

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54 **Package.**

57 A package comprising two joined members. One member is a closed member of cardboard or corresponding material and the other member is flexible.

Said one member has a closed peripheral portion and a completely covering bottom which is continuous with the peripheral portion.

The flexible member is fastened along its entire periphery at at least as many points of the outer member that the package has a stable shape.

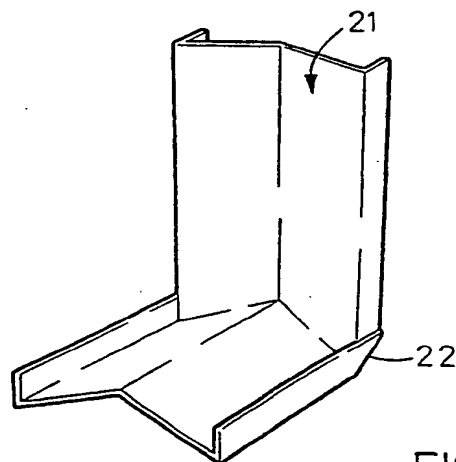


FIG. 4

Description

Package

The invention relates to a package which has two joined members, one of which is a closed flexible member containing a filling or product and the other of which is an outer member of cardboard or corresponding material.

In a first embodiment, the outer member, in a raised state, forms a tray.

The flexible member may for example be a sheet-shaped element of paper, plastic or metal, or a combination of the said materials. Said flexible member can however also be a flexible container such as a bag.

In a second embodiment, the outer member is a frame of cardboard or a corresponding material.

The invention has been brought about by an ambition to meet the need for a packaging technique which is environmentally safe and uses few resources by means of extreme saving of materials.

The problem which lies behind the invention is thus to provide a package wherein the flexible material and the outer member cooperate to provide a packaging construction which is strong, has an appearance which is well adapted to the purpose, and is comfortable to handle. In the case where the outer member is a frame, the consumption of materials is also minimal.

According to a further aspect to the invention, the material-saving packaging construction has shown itself to offer an alternative to traditional cardboard packages for example trays, but also an arrangement for handling thin wall "packages" i.e. otherwise difficult to master packages made of flexible packaging materials.

The combination of flexible material and stiff material is a well known packaging concept. There is for example the bag-in-box technique, where a plastic bag is contained in an outer package such as, for example, of the folding box type. This technique uses a great amount of material and is perhaps basically motivated mostly because cardboard traditionally being considered to be that which sells the product because of the good ability cardboard has to bear pressure and to be decorated.

Neither is the ability of the outer cardboard to stand stably especially good. One often find that an arched or outwardly convex surface, made so because of the filling technology, handling, etc, is the surface which is ultimately intended to serve as the standing surface.

Because of its lengthwise sealed parallelogram structure, an outer package in the shape of a so-called folding box has moderate resistance to diagonally acting forces. A folding box collapses rather easily under such a load.

In addition to the conventional cardboard and capsule techniques are of course a large number of techniques which in one way or another utilize a combination of flexible material and cardboard.

SE 432 576 shows for example a flexible package having a wrapper made of cardboard. This wrapper has a significant width and is placed along the broad

sides of the package. When using the wrapper the package is made resistant to pressure by folding down laterally sealed tins of the flexible package towards the outside and by allowing pressure to press the downwardly folded tins towards the pressure bearing wrapper.

A combination of a bag and a stiffer wrapper is shown in US 327 243.

In DE 22 15 350 is shown how one will make a plastic bag standable by fastening a strip having a profile roughly corresponding to the shape of sigma or W to its bottom.

The purpose of the invention is to improve the combination technique additionally in order to provide a finished package which is shapestable and as need arises to enable full authorization of the material saving effect in a great number of applications.

As was mentioned initially, the invention provides a package which has two joined members, one of which is a closed flexible member containing a filling or product and the other of which is an outer member of cardboard or corresponding material.

According to a first aspect of the invention, the package is characterised by the outer member being closed along its periphery and having a wholly covering bottom which is continuous with a peripheral portion, and by the flexible member being fastened along its entire periphery at at least as many points on the outer member that the package has a stable shape.

In one embodiment the outer member, in a raised state, forms a tray.

When in a flat state the outer member is preferably a member which can be decorated and which is fastened onto a filled flexible package which, along with its contents, will earlier have been subjected to a certain treatment, such as heat treatment which is destructive to the outer member.

Since the flexible member normally consist of a barrier specific material, normally high barrier material, plastic material and is therefore expensive, this material can be dimensioned with a view only to its barrier characteristics whereas the outer member, normally of the expensive cardboard material, takes care of the shape stability.

According to a second aspect to the invention, the package provided comprises two joined member, the one flexible and the other a frame of cardboard or the like.

According to the second aspect, characteristics for the package are that the frame is closed, that the frame has a profile which is terminated with a first outer member and a second outer member, that the profile is non-linear between said outer members and, seen in the direction of the circumference of the frame, has portions which extend outward and inward relative to the package that transition between said portions are located at the corners, that the profile, seen in a circumferencial direction of the frame, has a shape which on one side of a corner

is mirror reversed relative to its shape on the other side of the same corner, and that the flexible member is fasten to at least as many members of the frame that its deformation, viewed in the direction perpendicular to the plane of the frame, is restrained by the flexible member.

Depending upon the application, one or the other or both of the outer members may comprise a lip.

In one embodiment the frame has a mainly saw-tooth shaped profile provided with a lip whereby on the one side of the frame corner the profile turns its lips inwards into the package and on the other side of the same corner it turns its lips outward from the corner.

In another embodiment the profile between said lips is zigzag-shaped.

According to an additional embodiment, the profile between said lips or outer members is rounded.

In order to provide the non-linear profile member, in one embodiment the frame has corner folds or the like in a zigzag pattern transverse to its longitudinal direction in order to form the corners, in addition to which lengthwise running folds proceed from each point of a zigzag fold, and each of these lengthwise running folds changing its characteristics at the zigzag fold, so that a fold made from the one side of the frame material changes into a fold made from the other side of the frame material. Because of its shape the frame, which in itself is very rigid gains a high buckling strength and load bearing ability at its corners. Because the frame is closed it furthermore becomes very torsionally stiff despite the fact that it is built up with profiles which do not have a significant torsional stiffness of their own. In one embodiment said non-linear profile provides frame surfaces for securing the flexible member.

In one embodiment the said flexible member comprises a sheet, which is secured to the frame at a position such that a box is formed, whereby the sheet comprises the bottom of the box and the frame comprises its sides.

In an additional embodiment, the flexible member comprises a second sheet which is secured to the frame at a position such that the second sheet forms a lid for the box.

In an additional embodiment, flexible member is a thin-walled, deep-drawn tray package with a heat-sealed lid, whose sealing lips are symmetrically secured to the frame, for example the lips of a frame provided with lips or the said non-linear portion, where at both the lips and the said member.

In a second embodiment the flexible member is a closed plastic bag, which is fasten to the profiled frame at so many points, that the resulting packing becomes rigid. If the plastic bag is provided with a spout in one corner and a recess in a adjacent corner, a package is achieved which stands securely which has a handle, which is comfortable to pour out of which has the characteristics of a pitcher. In this example the securing of the plastic bag is unsymmetric. This package can be resealed by the spout being folded around one of the lips of the frame, which is provided with lips and is locked in this position by being inserted into a slot in the frame.

In another similar embodiment the package is suitable for, e.g. infusion solutions. In operation the spout is turned downwards and the package is hung from a corresponding corner of the frame. The securing of the plastic bag is in this case symmetric or unsymmetric. In the embodiment where the flexible member simply comprises a sheet or foil, which is fasten to the lips of the frame, if such are provided or to the non-linear portion of the profile between its first and second outer members, a stable and cheap box or carton for, e.g., candy, berries, fruit, etc, is achieved. With yet another foil or sheet fastened to the opposite end portion of the non-linear profile member or the opposite lip, one obtains a lid for this package. The bottom or lid of the box can be of an air permeable material such as a so-called non-woven or a net. In the latter case, it is advantageous for maintaining the rigid shape of the package if the treads of the net form an angle with the sides of the frame. In the case when one uses a sigma as a starting point the profile of the frame does not necessarily have to be a simple sigma. In the alternative the frame may consist of two or more "sigmas" placed one upon the other, whereby the profile takes up less space in the plane of the package.

The invention also provides a method for manufacturing a shape-stable package comprising to joined members, the one flexible and the other an outer member of cardboard or the like.

Characteristic for the invention is that a closed member containing filling which member forms the flexible member is fasten to the outer member, which is closed along its periphery and that the flexible member is fasten to at least so many portions of the outer member that the shape-stable package is achieved.

In one embodiment the flexible member with filling is subjected to a certain treatment which is destructive to the outer member, for example, heat treatment, before it is fasten to the outer member.

The outer member can for example be chosen as a workpiece which may be raised to form a tray and may be decorated in advance.

The inner member is suitably secured to lips on the tray.

According to a further aspect of the invention a method for manufacturing a shape-stable package is provided comprising two joined members, one flexible and the other an outer member of cardboard or a corresponding material. Characteristic for this method is that the outer member is chosen as a peripherally connected frame, which has a stiffening design.

The invention will now be explained and exemplified with reference to the accompanying drawings, in which

Fig. 1 shows a package comprising a closed inner member containing a filling material as well as an outer member in the shape of a tray,

Fig. 2a, b, c and d show different frame profiles for a principle embodiment of the invention,

Fig. 3 is a planar view showing a part of a strip intended to be frame material according to the

invention,

Fig. 4 shows a perspective view of a inside corner formed of the frame material in Fig. 3,

Fig. 5 shows a perspective view of thin-walled package of the tray type enclosed by an enclosing frame,

Fig. 6 and 7 show two perpendicular sections along the lines V-V and VI-VI respectively in Fig. 4 as an alternative for insertion and securing of the thin-walled plastic package in the frame,

Fig. 8 shows a third alternative for said insertion and securing,

Fig. 9 shows a fourth alternative for said insertion and securing,

Fig. 10 shows a perspective view of a package having the function of pitcher formed from a flexible bag fasten to a frame of sigma profile type,

Fig. 11 shows the basic shape of the bag in Fig. 10,

Fig. 12 shows a perspective view of a suitable position for the spout of the bag in Fig. 12 during transport of the package according to Fig. 10 as well as in a reclosed state,

Fig. 13 shows a perspective view of a package for, e.g., infusion fluids, formed of a flexible bag provided with a spout and fasten in a Z-profile frame. In this example the package is shown as being hung with a corner of its frame hooked on a hook,

Fig. 14 shows a planar view of a portion of a strip intended as material for a double frame according to the invention,

Fig. 15 shows a perspective view of the inside of a corner manufactured of the material in Fig. 14, and

Fig. 16 shows a complete package comprising an inner tray and a frame manufactured of the material in Fig. 14.

The tray in Fig. 1 is a traditional cardboard tray provided with as lip. A closed flexible package of, e.g., a high barrier plastic material containing filling is carried in this tray, a plastic container or bag is fasten to the lips of the tray to at least as many portions or positions that a shape stable unit is achieved. The lip or flange in Fig. 1 is directed inwards, of course, flange directed outwards are also possible. Additionally, the side walls, one pair or both pairs of said walls, they have a beam-shaped structure.

The form stability of this unit comprising the outer tray and inner bag is therefore determined by the inexpensive cardboard material of the outer tray. The barrier characteristics are determined completely by the plastic material, so that the cost may be optimised since the more expensive plastic material need only be dimensioned for barrier protection and not for the purpose of shape stability.

Since the product in the plastic package usually will be subjected to heat treatment of a level which the cardboard cannot withstand, the cardboard material is fastened only after termination of the heat treatment. This is also the correct choice from the viewpoint of the process.

Using the designation a, Fig. 2 shows first basic shapes of non-linear profiles, more particularly as viewed from the left, one concave profile and one convex profile; the designation b indicates two different basic shapes of profiles provided with lips, the one in the shape of a sigma and the other in the shape of a mirror reversed sigma; the designation c indicates additional examples of profiles provided with lips where the non-linear profile member has lips as in the case b; and the designation d indicates two "double sigma" or "double zigzag" profiles provided with lips.

The strip 10 in Fig. 3 is a strip of cardboard or of a corresponding material. The solid lines 11, 12 and 13 indicate fold lines for other similar weakened areas, which are applied to the strip material in the upward turned side according to Fig. 1. The dashed lines 14, 15, 16 and 17 indicate fold lines or the like made in the other side of the strip.

The zigzag line defines the limited lines which determines the corner figuration when a frame is formed according to Fig. 4 which shows the inside of a corner. The profile or profile shape which is indicated in Fig. 4 and which is principle comprises portions forming a sigma (capital sigma) or mirror reversed sigma or W, depending on which side of the corner one views the frame from, has proven itself to provide high bending and torsional rigidity for a closed frame.

This makes the frame especially suitable as a stiffening rim for a package 18 of tray type comprising a bottom portion 19 and a lid 20 (Fig. 5-7). Such trays are very stable especially when filled and with respect to shearing forces in the plane of the lid or planes parallel therewith, but the strength is insufficient with regard to bending and turning about axes in said plane.

The incompensating frame 21 in Fig. 5-7 provide the needed strength in this respect and provide furthermore a package which is easy to handle and which, moreover has good standing characteristics.

The enclosing frame 21 in Fig. 4-7 is sealed or fasten to the tray in accordance with the invention so that the flexible member, in the present case the tray provided with a lid, is fasten to as many portions of the frame 21 that its deformation, viewed perpendicular to the frame, is prevented by the flexible member.

As will be seen by comparing Fig. 6 and 7, the "non-linear member" of the profile in the present case having a "W-characteristic" from the one side of the corner to the other side. Viewed in the direction of the circumference, the frame has generally portions which extend outward and inward relative to the package in the frame, and transition portions 22, 23, 24 and 25 between such portions are located at the corners.

In the exemplifying embodiment in Fig. 6 and 7 the frame is provided with lips and the flexible "inner package" is fasten to the upper sides of the lips of the zigzag-shaped profile, which thus change their orientation relative to their inner package in the corner regions.

In Fig. 8, 9 and 10 are shown another possibilities for fastening which is stilled done so that the

deformation of the frame, viewed in the direction perpendicular to the plane of the frame is prevented by the flexible member and "inner container" comprising a tray member 19a and a lid 20a is fastened to the lips of the frame 21a, in this case to the underside of the lip on the one side of the corner and to the upper side of the opposite side of the corner. As in Fig. 6 and 7, it is fastened at as many points of the enclosing frame or its lips, that the deformation of the frame viewed in a direction perpendicular to the plane of the frame, is prevented by the flexible member. Fastening may for example be done using pointwise applied melting glue or by heat sealing all the way around using a thermal plastic material.

In Fig. 11 and 12 is shown an additional case where an enclosing frame 21b is utilized together with a flexible inner package having a lid and tray. Instead of fastening the incompensating boarder lip of the flexible package to the frame lip all the way around the frame, one has chosen to fasten two opposing sides of the "non-linear member" of the profile, i.e., in the present case, in the W-shaped member of the zigzag-shaped or the sigma-shaped profile. Even in this case one guarantees that the fastening will be sufficient for the flexible member to provide the frame with the ability to assist deformation viewed in a direction perpendicular to the plane of the frame.

Instead of the zigzag profile according to the Fig. 6-12, one may of course also envision a profile shape according to a in Fig. 1, c or d. A package having a frame with profile d is shown in perspective in Fig. 17.

In Fig. 12 a frame 21c supports a bag 26 according to Fig. 17. This bag 26 is of the type which is manufactured to be spill free by means of welding and punching through webs of flexible material or a lengthwise sealed tube.

The bag has two characteristic members, namely a pouring spout 27 and a recess 28 which corresponds to the spout. The recess leaves an open space for inserting a finger between the bag and the frame after the bag has been hung in the frame. By punching out or by some other method providing a slit 29 in the frame 21c (Fig. 12), one makes it possible to reclose the bag 26.

Fig. 13 shows how the free space between a bag 26a and a frame 21d is used for hanging the packing on a hook 30. In this case there may for example be some kind of nutrient solution in the bag 26a for delivery of the solution to a patient. For such a purpose, the bag 26a is provided with a drainage tube 31.

Fig. 14 shows a strip-shaped material 10a for a "double-zigzag profile", the one corner 22a being shown from the inside of the frame.

Fig. 15 shows a frame manufactured of a material in Fig. 15 together with an upper, flexible, sheet-shaped element 20c, which can be opened. A corresponding sheet-shaped element is fastened to the lower encircling lip in the frame and serves as a bottom for the package in Fig. 8.

Fig. 16 shows a product containing tray formed from a frame 22c made of the strip in Fig. 14 and a thin top closure 20c and a bottom closure of similar

type.

Claims

1. A package comprising two joined members, the one flexible and the other an outer member of cardboard or corresponding material, where the flexible member is a closed member containing a filling product, CHARACTERISED IN that the outer member has a closed peripheral portion and a completely covering bottom which is continuous with the peripheral portion, and in that the flexible member is fastened along its entire periphery at at least as many points of the outer member that the package has a stable shape.

2. Package according to claim 1, CHARACTERISED IN that the outer member, in a raised state, forms a tray.

3. Method for manufacturing a package with stable shape, comprising two joined members, the one flexible and the other an outer member of cardboard or corresponding material, CHARACTERISED IN that a closed member containing a filling forms the flexible member and is fastened to the outer member, which is closed along its periphery and has a fully covering bottom, and in that the flexible member is fastened at at least as many points of the outer member, that said shape-stable package is achieved.

4. Method according to claim 3, CHARACTERISED IN that the flexible member with its filling is subjected to a certain treatment, for example heat treatment, which is destructive to the outer member, before it is fastened to its outer member.

5. Method according to claim 4, CHARACTERISED IN that the outer member is chosen so that it may be raised to the shape of a tray and decorated in advance.

6. Method according to claim 5, CHARACTERISED IN that the fastening is made to lips of the tray.

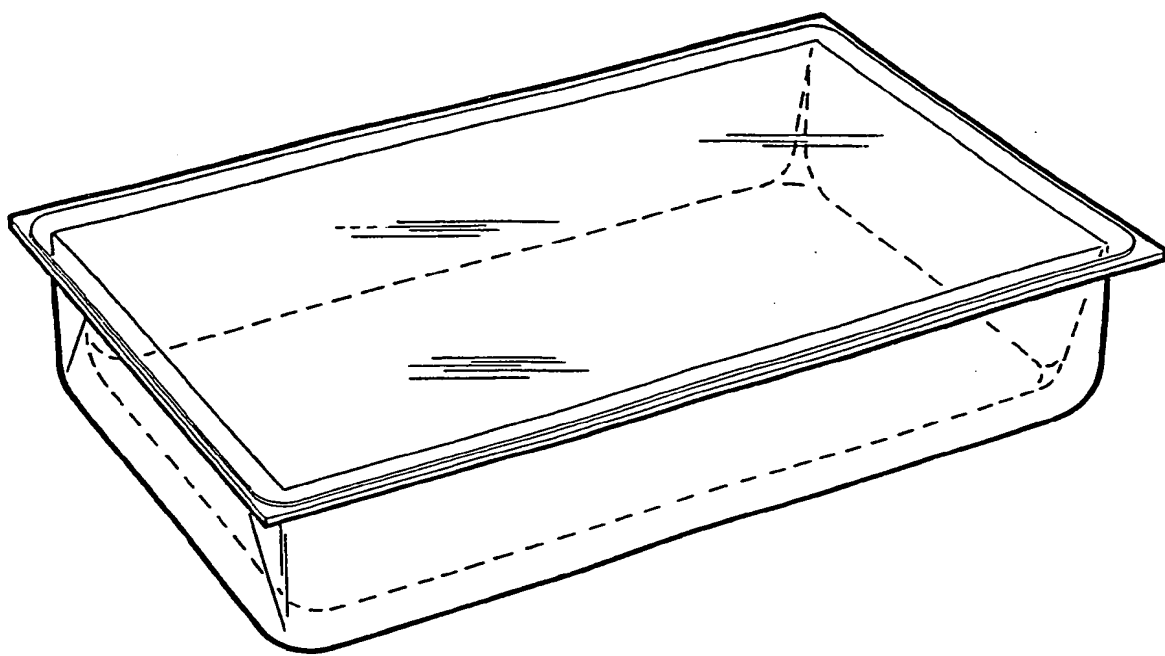


FIG. 1

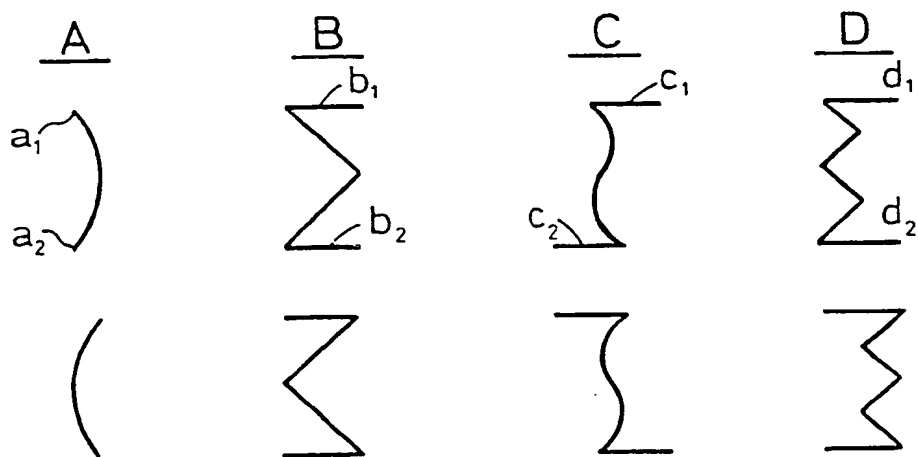


FIG. 2

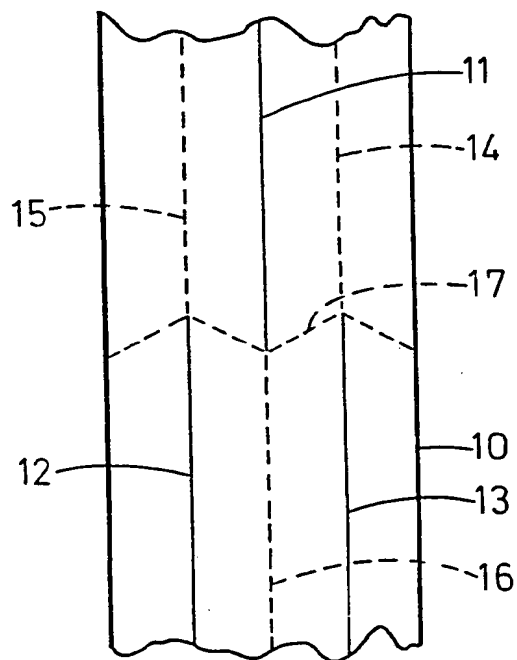


FIG. 3

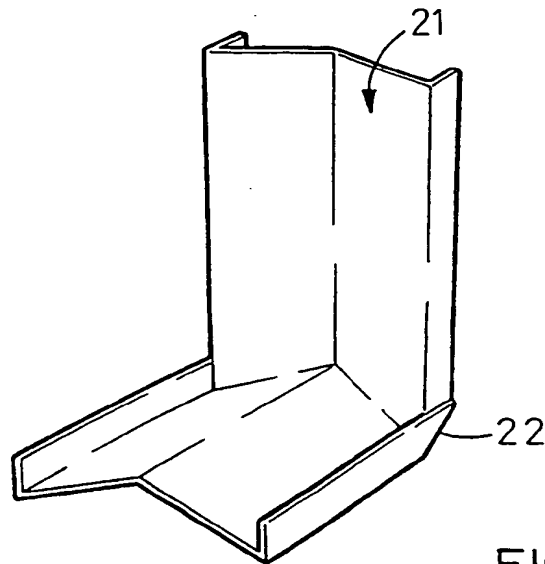


FIG. 4

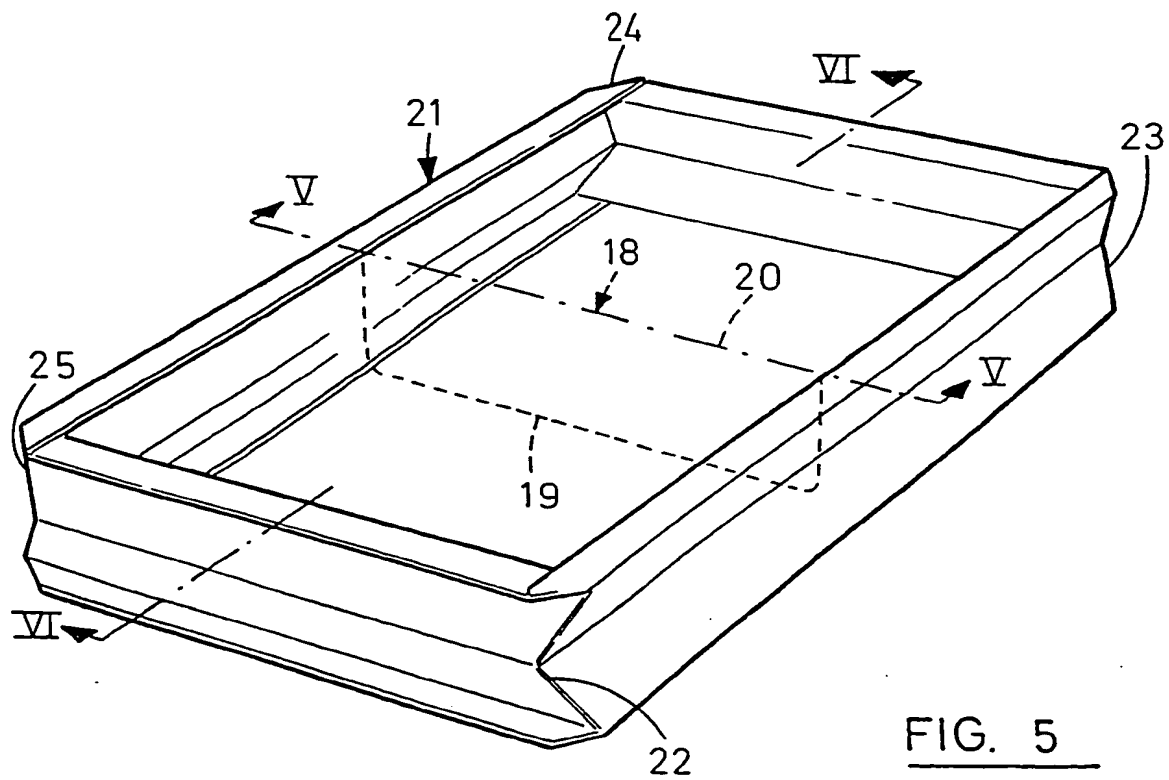
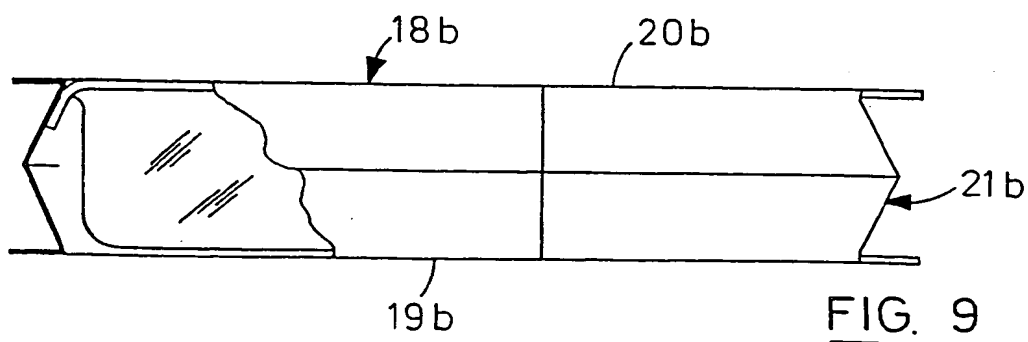
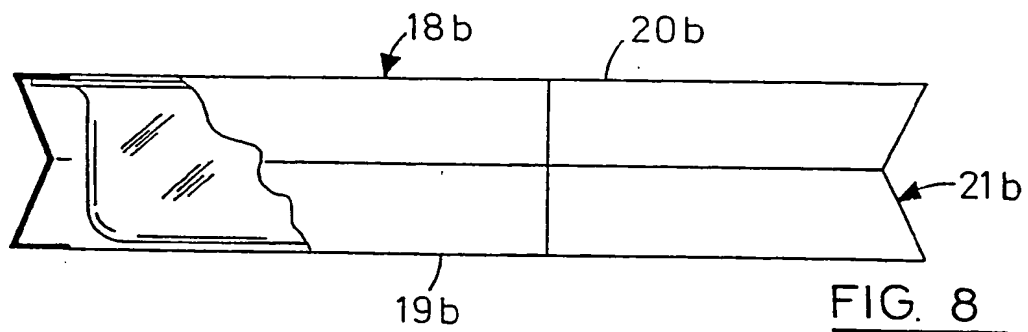
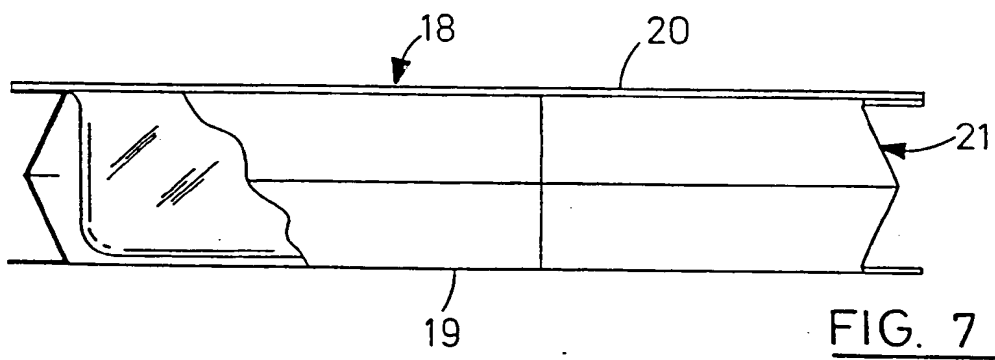
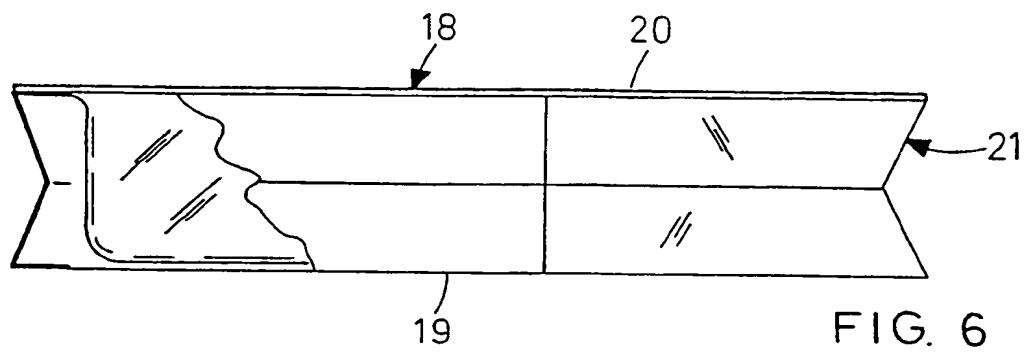


FIG. 5



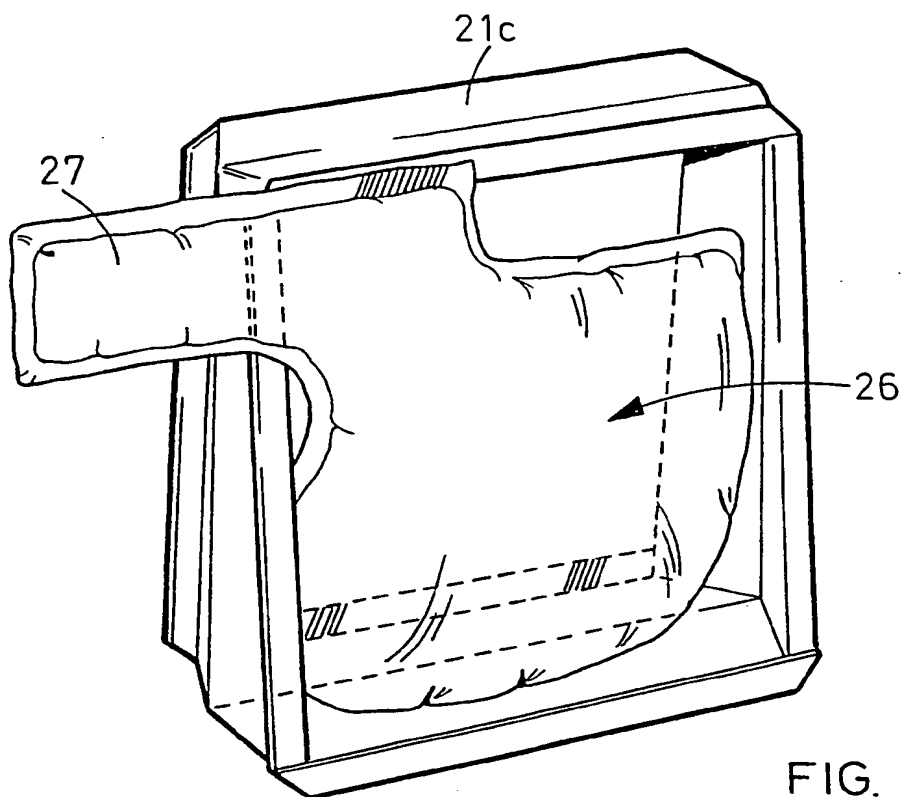


FIG. 10

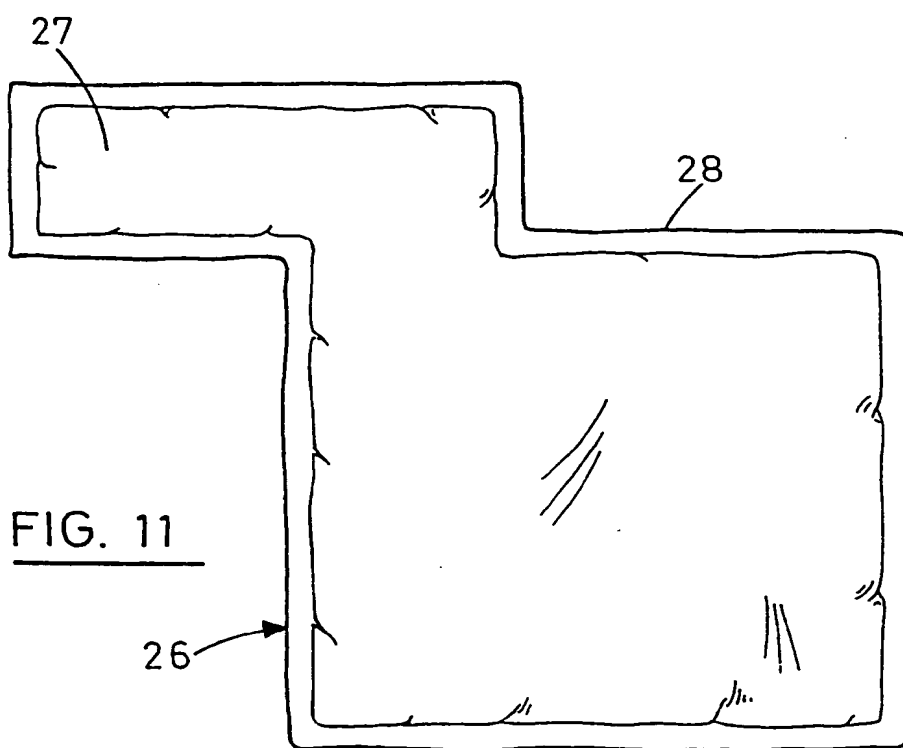


FIG. 11

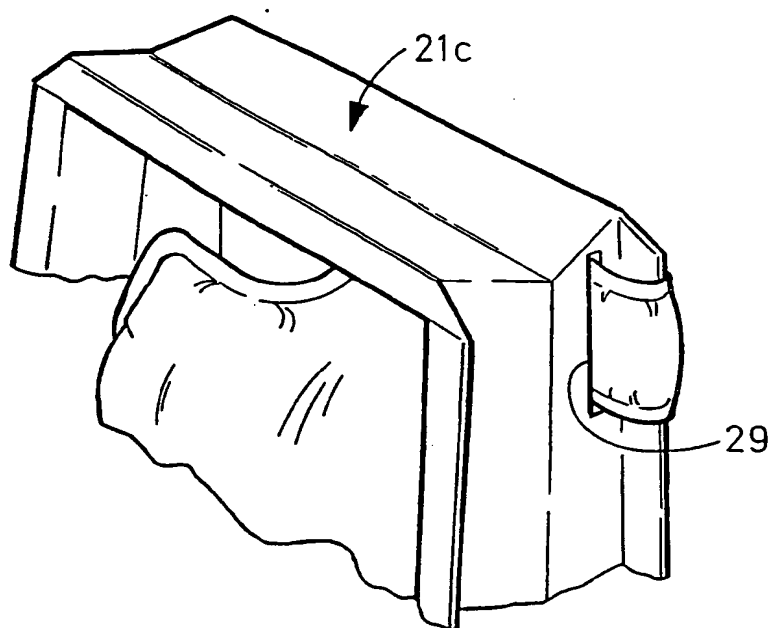


FIG. 12

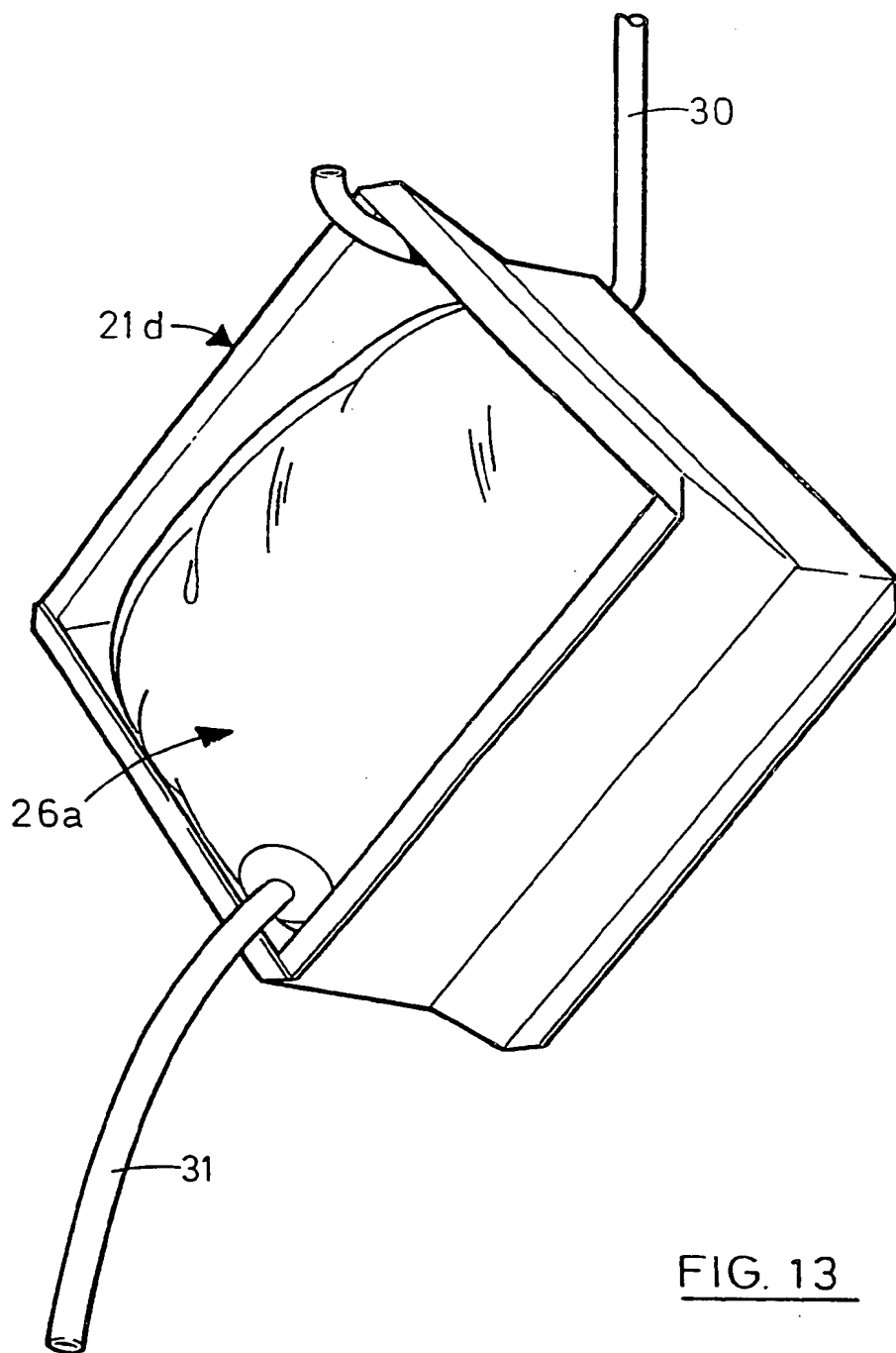


FIG. 13

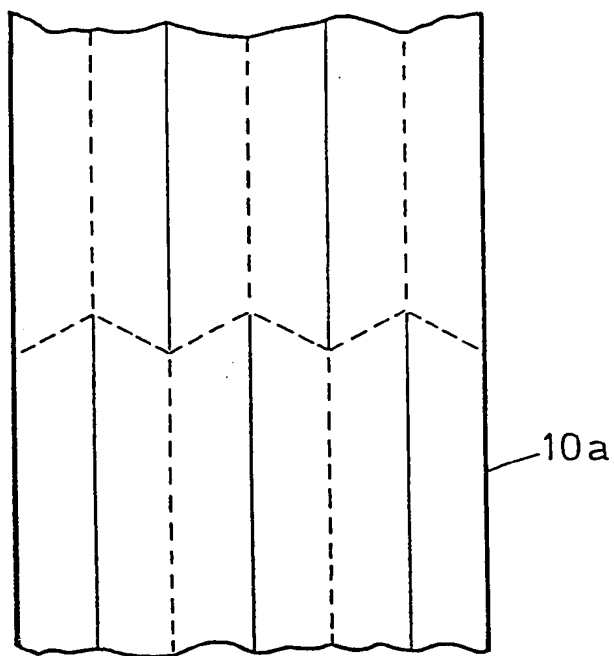


FIG. 14

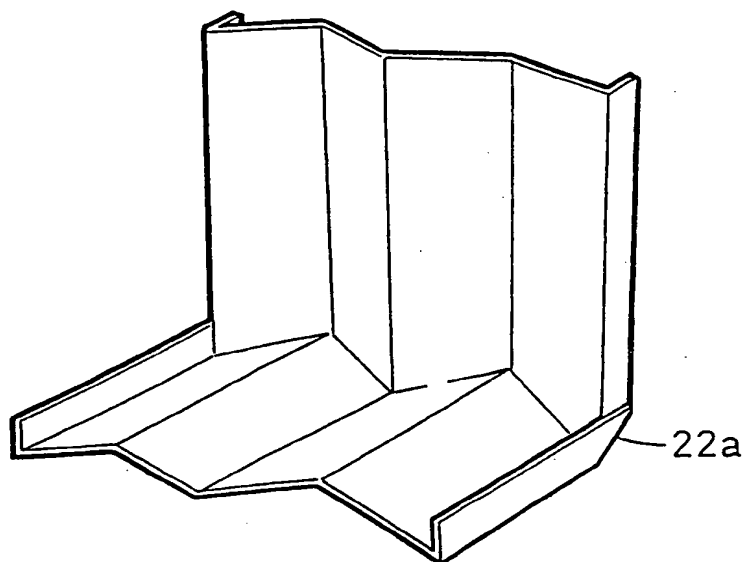


FIG. 15

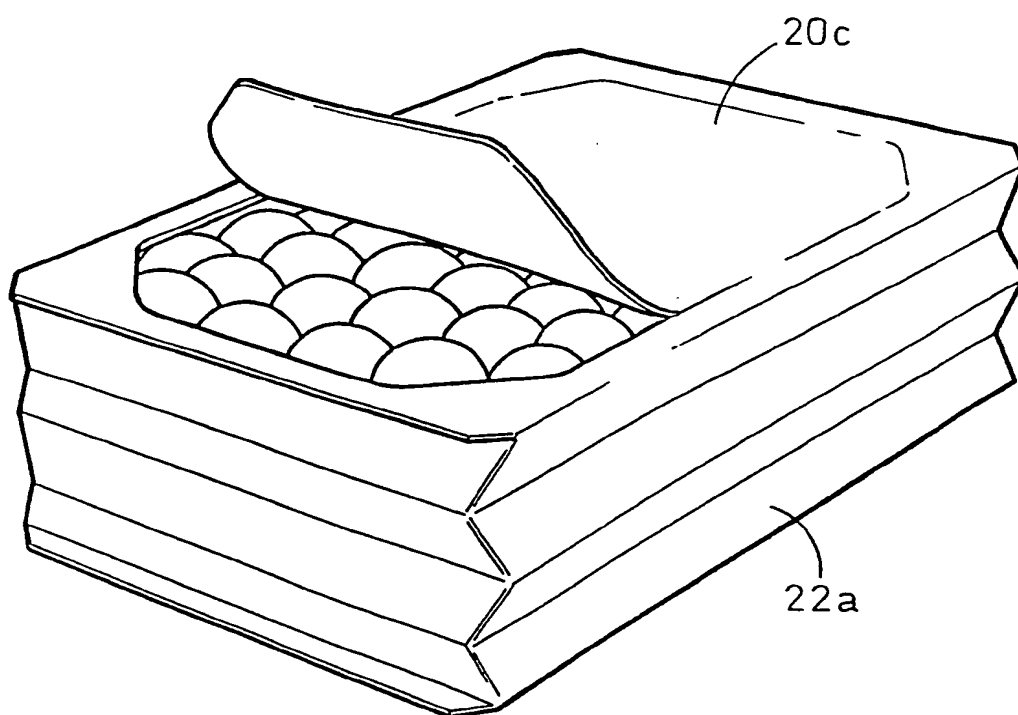


FIG.16

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EUROPEAN PATENT APPLICATION

⑳ Application number: 89850050.9

⑤① Int. Cl.⁴: B 65 D 75/52

㉔ Date of filing: 14.02.89

③① Priority: 15.02.88 SE 8800494

④③ Date of publication of application:
23.08.89 Bulletin 89/34

⑧④ Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

⑧⑧ Date of deferred publication of search report:
07.02.90 Bulletin 90/06

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⑤④ Package.

⑤⑦ A package comprising two joined members. One member (21) is a closed member of cardboard (21) or corresponding material and the other member (18) is flexible (18).

Said one member has a closed peripheral portion and a completely covering bottom which is continuous with the peripheral portion.

The flexible member is fastened along its entire periphery at at least as many points of the outer member that the package has a stable shape.

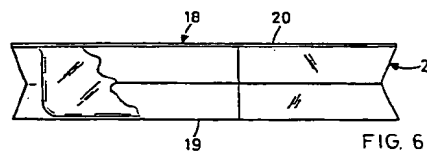


FIG. 6



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 85 0050

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	GB-A-1 416 816 (SCHOLLE CORP.) * Figure 1, claim 1 * ---	1,2,3,5	B 65 D 75/52
A	DE-A-2 218 481 (K. LICH) * Page 2, lines 2-8; page 4, lines 9-18; figure 1 * ---	1-3	
A,D	US-A-4 367 842 (RAUSING) * Figures 1,4 * & SE-A-432 576 -----	1,3,5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			B 65 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26-10-1989	Examiner ANDEREGG P-Y. F.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			

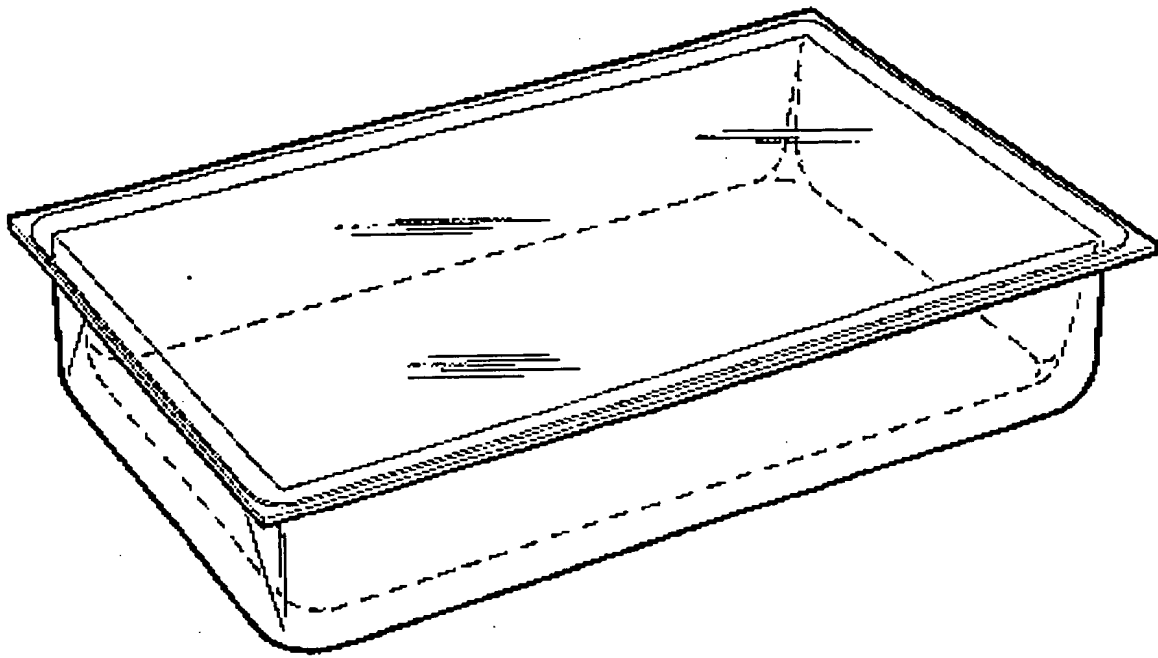


FIG. 1

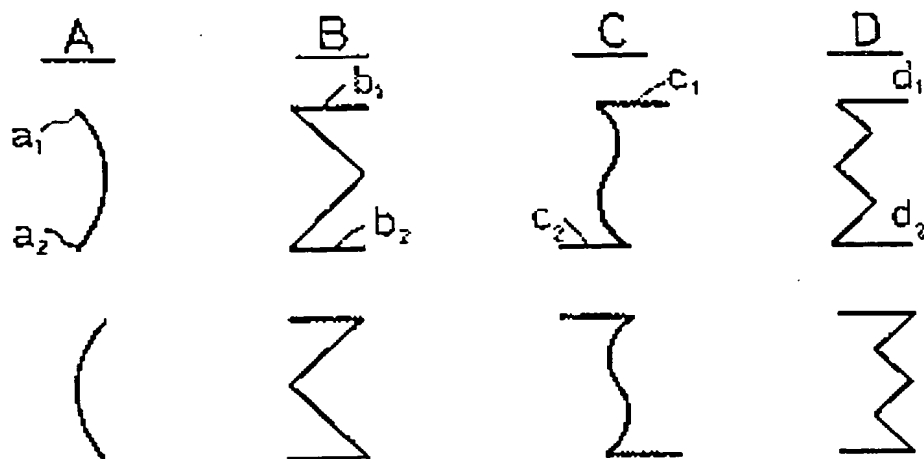


FIG. 2

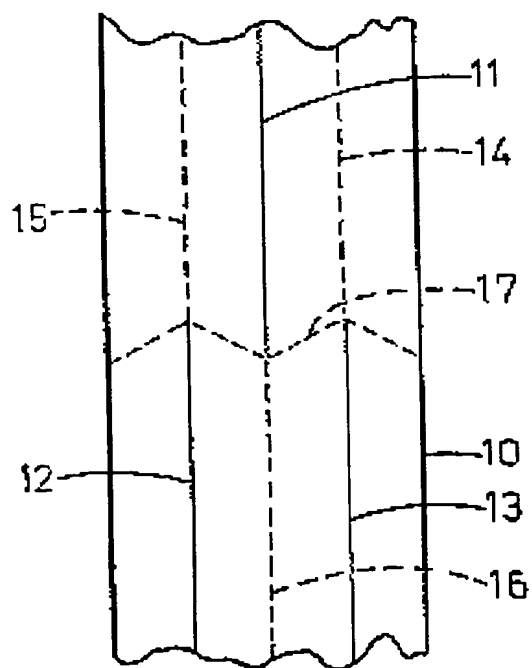


FIG. 3

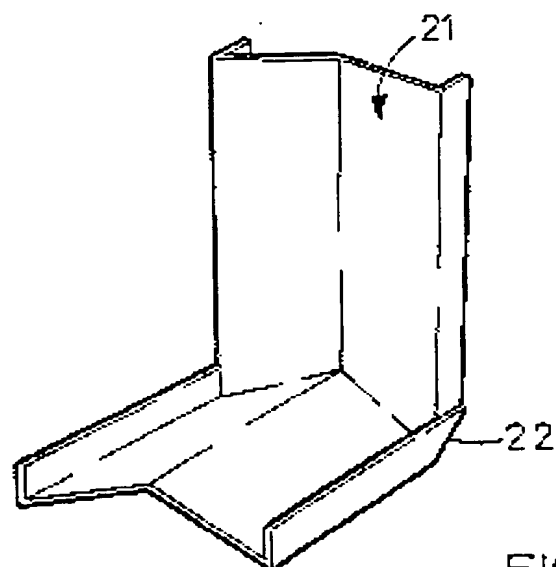


FIG. 4

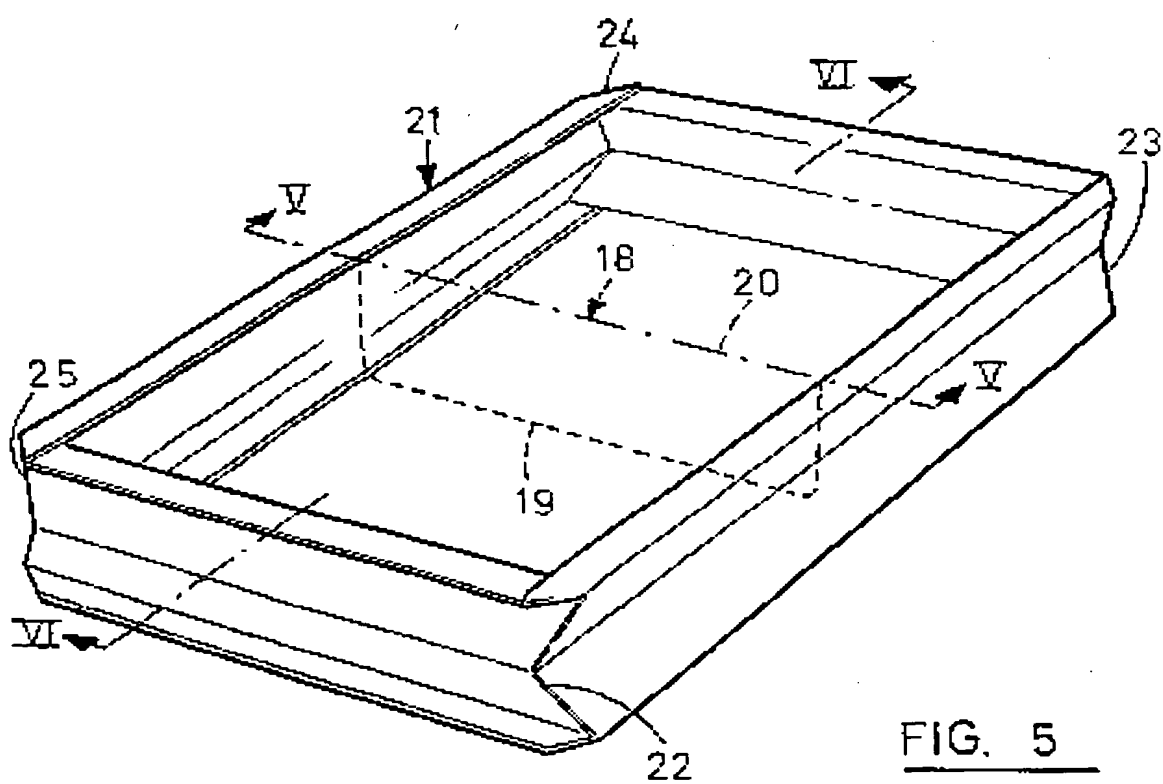
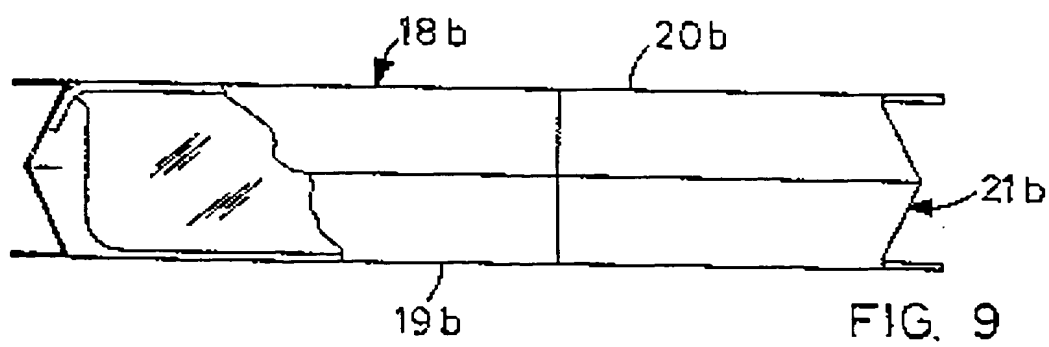
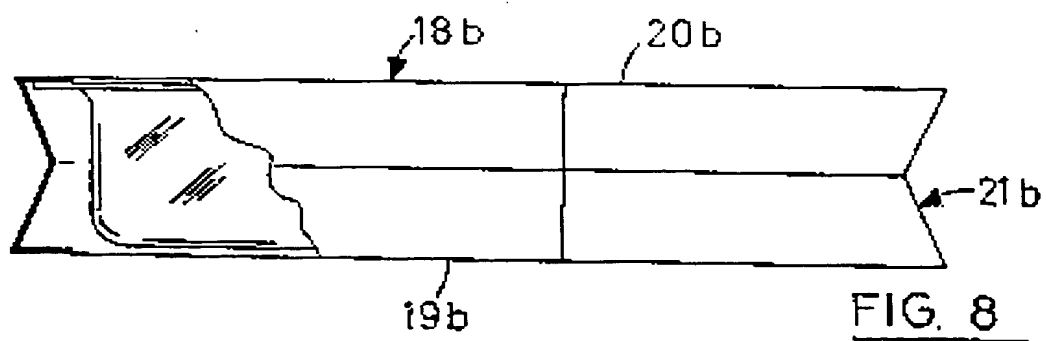
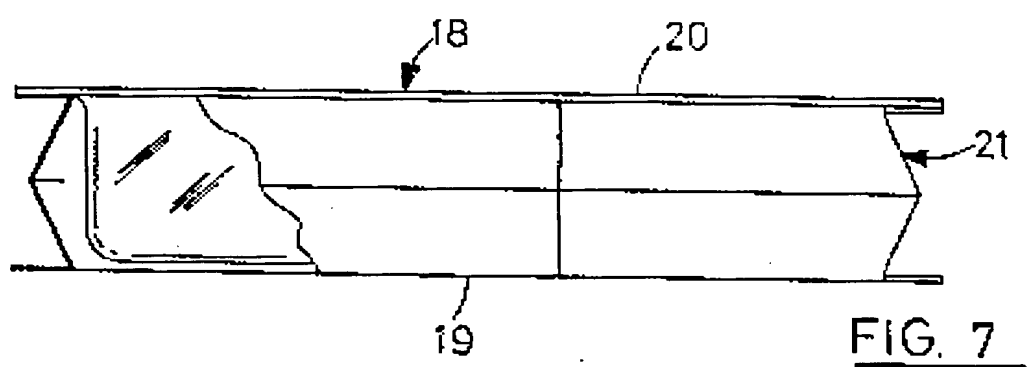
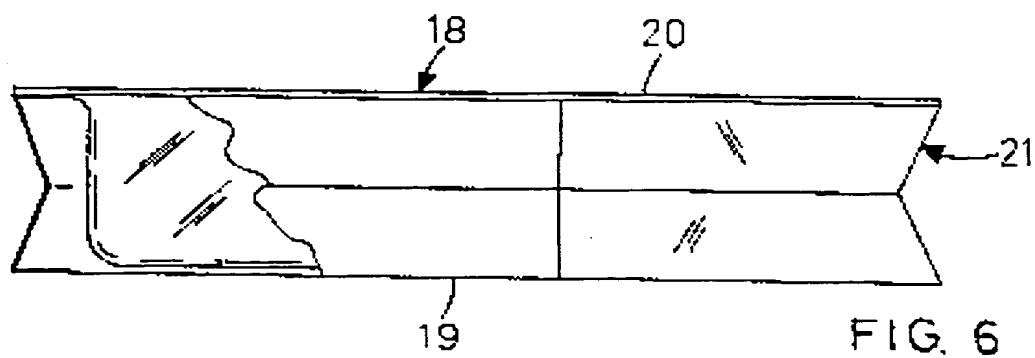


FIG. 5



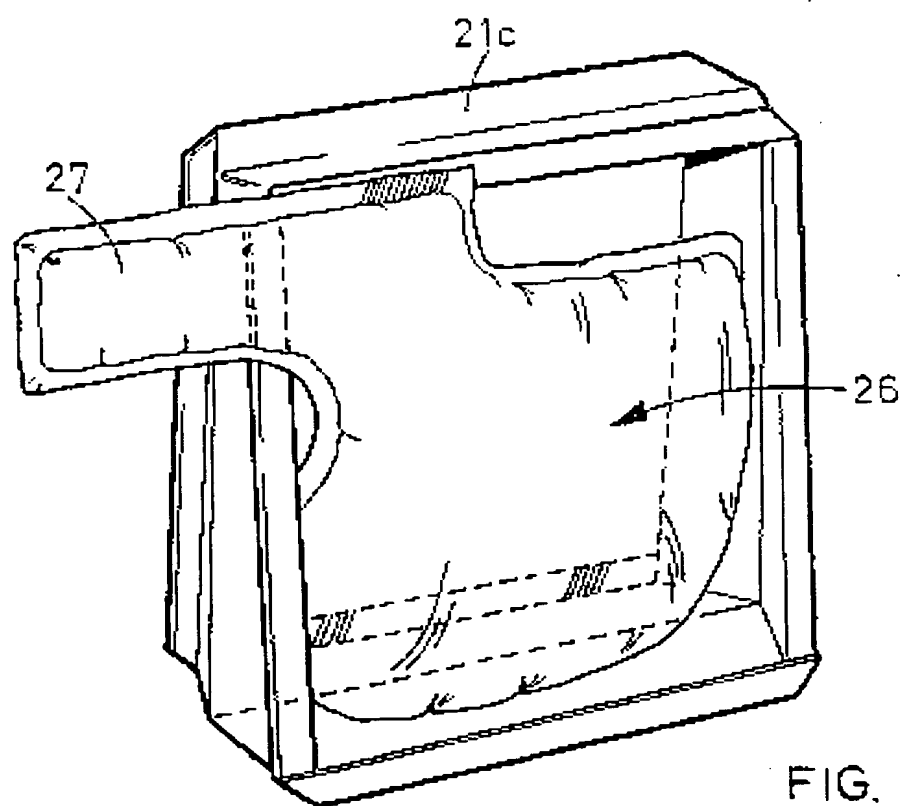


FIG. 10

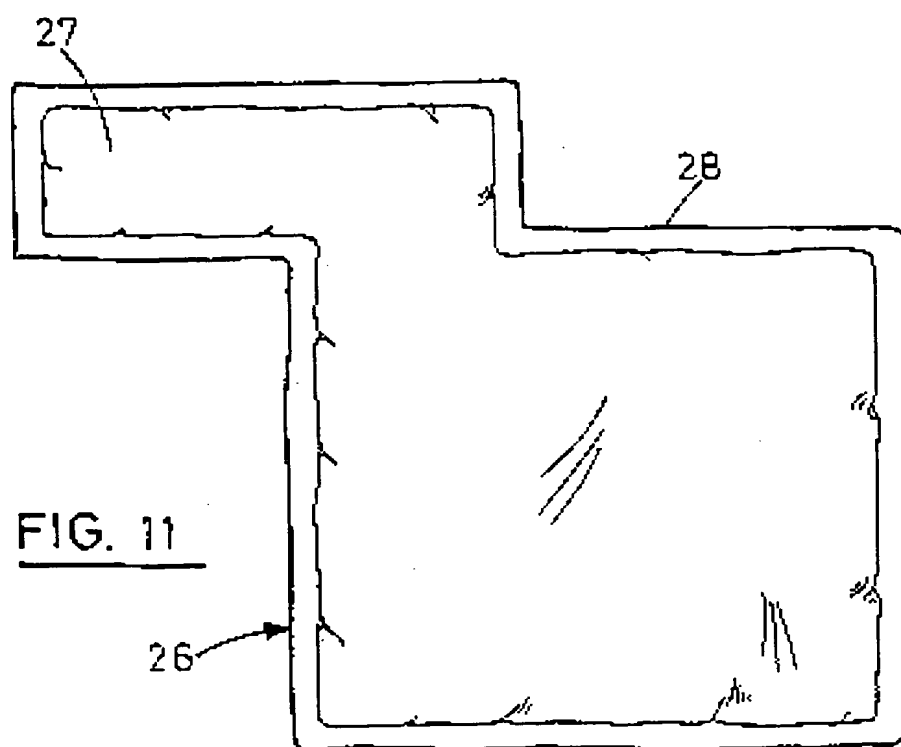


FIG. 11

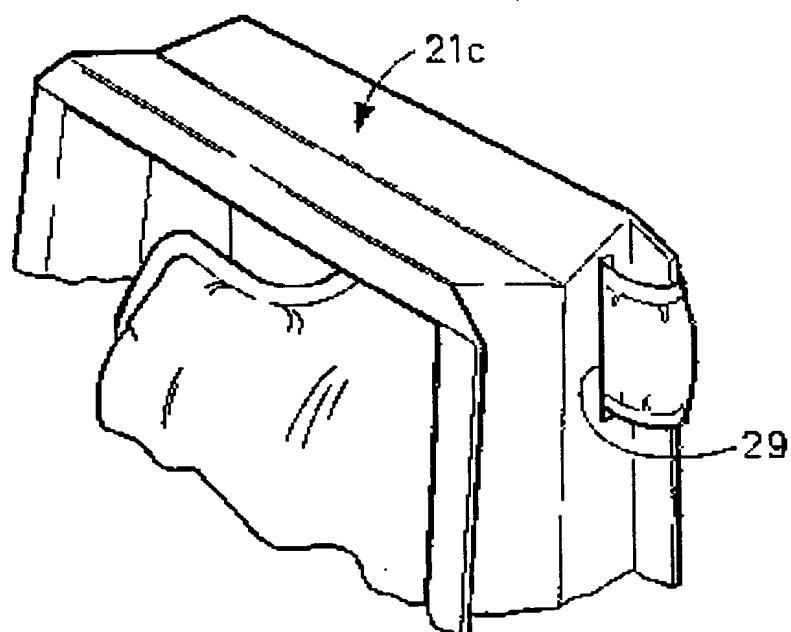


FIG. 12

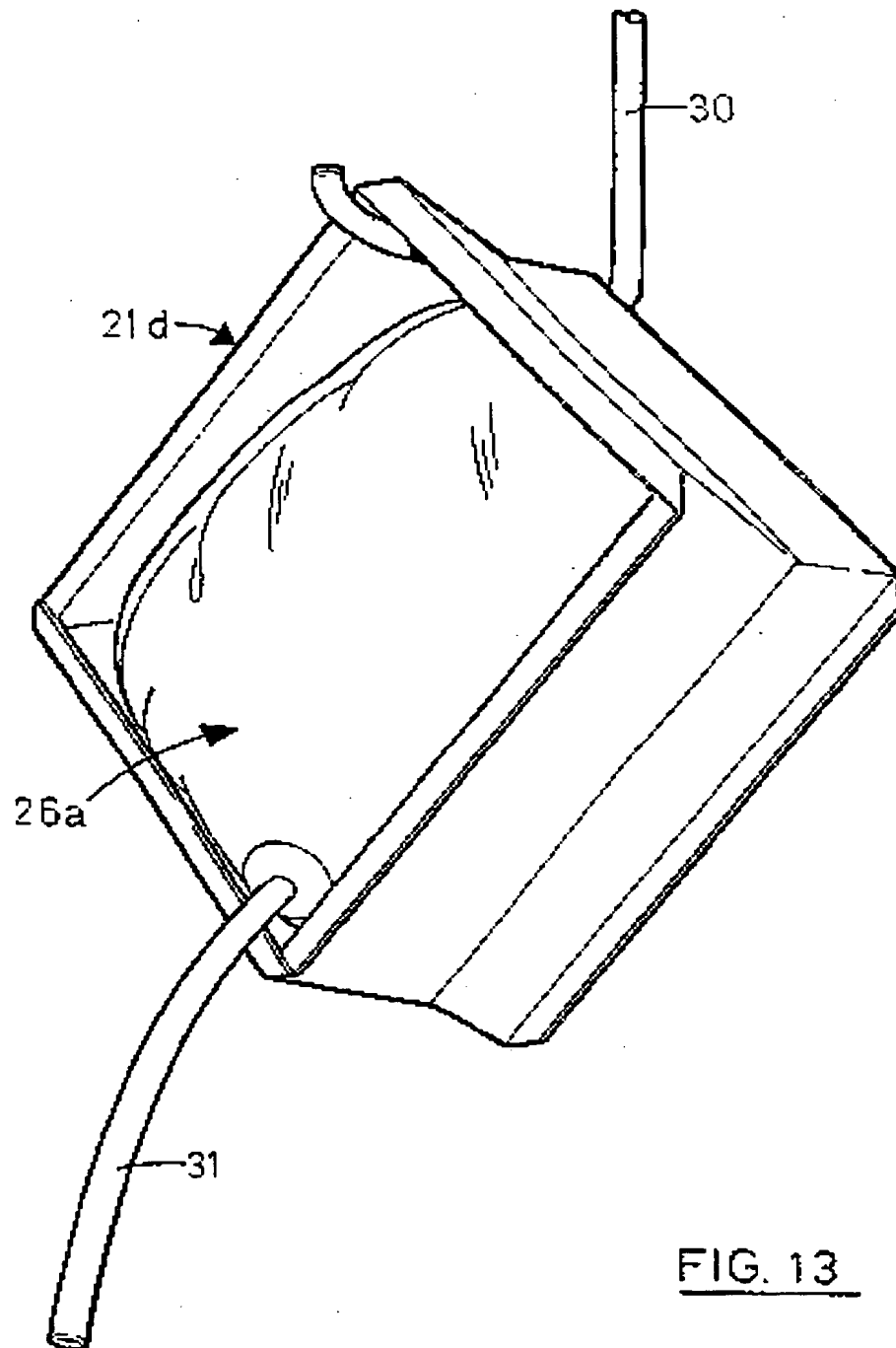


FIG. 13

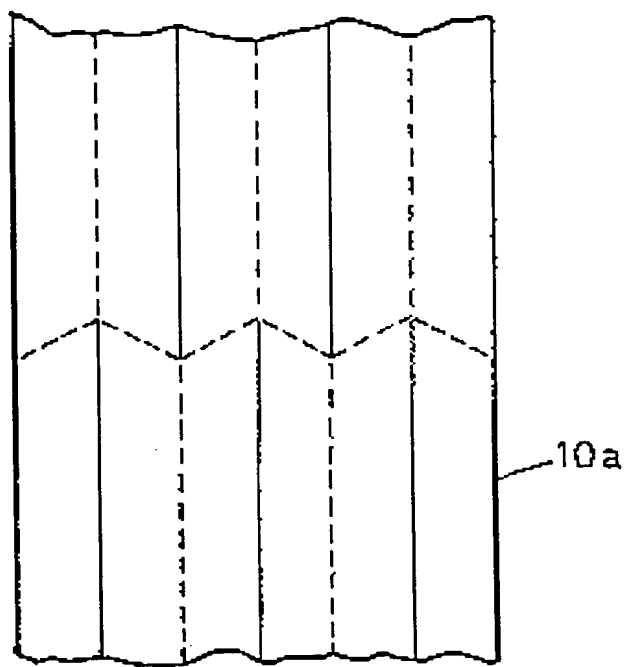


FIG. 14

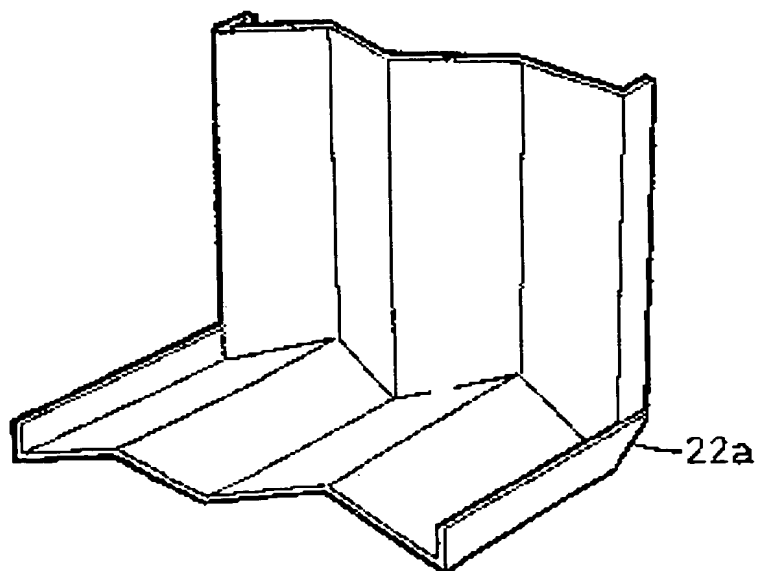


FIG. 15

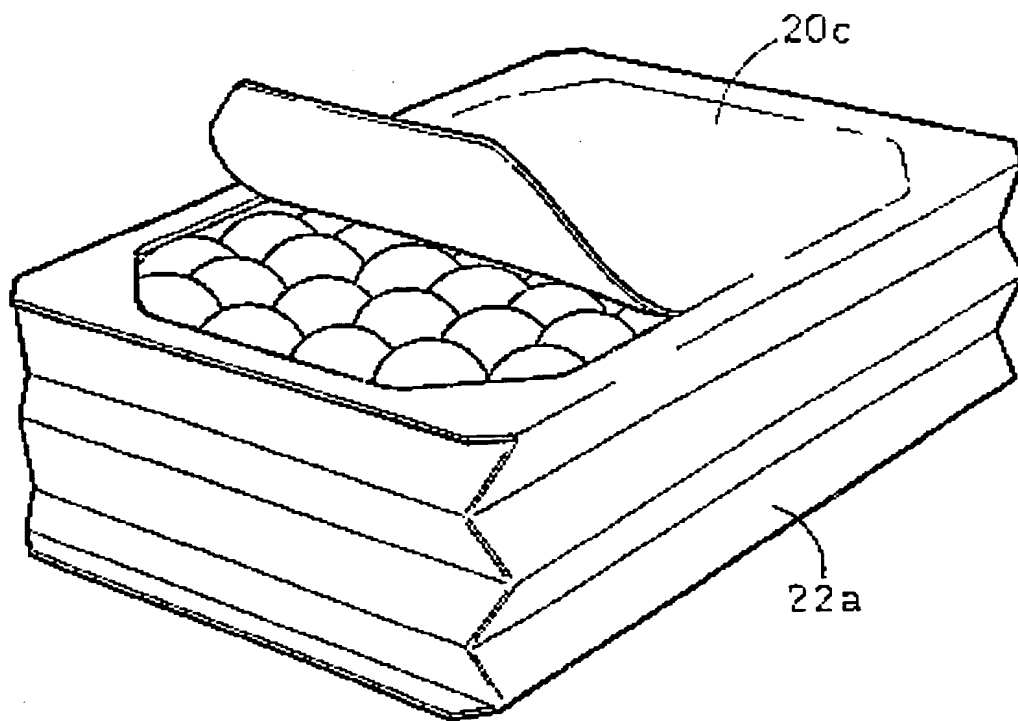


FIG.16

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